REMARKS/ARGUMENTS

Favorable reconsideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 9-16 are pending, with Claims 17-18 canceled and Claims 9, 12, 14 and 15 amended by the present amendment.

In the Official Action, Claims 9-18 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Pombo et al. (U.S. Patent No. 5,799,256, hereinafter Pombo) in view of Sato (U.S. Patent No. 5,953,677).

Claims 9, 12, 14 and 15 are amended to recite:

> performing a first and second control process, wherein
> when the movement state is a low-speed state, the first control process shortens a low-speed reception period as the reception state degrades,
> when the movement state is a high-speed state, the second control process shortens a high-speed reception period as the reception state degrades, and
> when the reception state is constant, the high-speed reception period is shorter than the low-speed reception period.

Support for this amendment is found in Applicants' originally filed specification.[1] No new matter is added.

With Applicants' claimed invention, two problems are solved:

- Problem 1: In conventional systems, when reception state is measured in the vicinity of the base station, the reception state is good and therefore the reception period is changed to a longer period. However, when moving in high-speed, the mobile station moves to a cell of another base station before the mobile station searches for the next control signal. Therefore, if the reception state is controlled only on the basis of the reception signal, the mobile station cannot promptly find a suitable base station for a connection.
- Problem 2: In conventional systems, when the mobile is halted, the reception period is changed to a longer period. However, in a case where the mobile station is located in a boundary between cells, the suitable base station changes based on radio wave conditions. Therefore, if the reception signal is controlled only on the basis of the movement state, the mobile station cannot find a suitable base station for a connection.

[1] Specification, lines 2a and 3a of Figs. 6A and 6B; and lines 2c and 3c of Figs. 6A and 6B.

Pombo discloses a method for conserving battery power in a battery operated communication device by using predictions of user location, user movement and user actions.[2] To enhance user convenience, the method and apparatus of Pombo operates to reduce consumption of energy stored in the battery 120 by powering down or removing power from elements of the mobile station when those elements are not in use. The method and apparatus according to Pombo operates to extend battery life by predicting user location, mobility and action. There are three main processes in Pombo which may be combined to reduce power consumption. One of the processes predicts user ***location***. A second process predicts user ***movement***. A third process predicts ***when the user needs to communicate***.[3]

Regarding the first process (predicting user location), Pombo discloses that predicting user location allows the mobile station 104 to only search for control channels broadcast by base stations in the locations where the user and the mobile station 104 will be present. Since not all control channels are broadcast by all base stations, if the mobile station 104 can determine which control channels are in use, the mobile station can reduce the time during which the receiver 108 must be powered up, drawing power from the battery 120. For example, in a PHS system, the mobile station 104 can reduce battery consumption by only searching for predicted control channels, rather than all 77 control channels. The mobile station 104 maintains a historical record of past base station communications and associated times when a control channel from a particular base station was detected. The mobile station 104 searches for a base station more frequently around the time and on the channels where the base was previously found and less frequently otherwise. When not searching, the mobile station 104 remains in a low-power sleep mode.[4]

Regarding the second process (predicting user movement), Pombo discloses predicting user movement allows the mobile station 104 to eliminate unnecessary registration

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[2] Pombo, abstract.
[3] Pombo, column 5, lines 11-23.
[4] Pombo, column 5, lines 23-42.

to other base stations when the mobile station 104 is already locked to a base station. The mobile station monitors the control channel of the base station it is locked to and the surrounding base stations' control channels. The received signal strength (RSSI) for each base is detected and stored. The algorithm uses a weighted table of signal strength samples collected for base stations detected by the mobile station 104 to determine user movement. The mobile station generally remains in a low-power sleep mode, wherein elements such as the receiver 108 and the transmitter 110 are powered down to conserve energy stored in the battery 120. After a predetermined time period, such as 1.5 seconds, the handset periodically changes from the sleep mode to an active mode by powering up the receiver 108 and associated circuitry. If the signal strength of the control signal broadcast by the base station the mobile station 104 is locked to is below an acceptable level, the mobile station 104 scans the control channels recommended by the algorithm that predicts user location. If the expected base is not found, then every other time the mobile station wakes up, all the control channels are scanned. As the mobile station moves, establishing communication and registering with various base stations, the mobile station collects a history of the signal strength the base is locked to and surrounding bases. In this manner, the mobile station 104 can determine if the user and mobile station 104 are moving away from the base the mobile station is locked to (the current best base) and toward an adjacent base (or potential best base). Average signal strengths from the two bases are used to determine if the user is moving.[5]

Regarding the third process (predicting when a user needs to communicate), Pombo discloses predicting when the user needs to communicate allows the mobile station to enter a very low power mode or continuous sleep mode. In the continuous sleep mode, in distinction to the sleep mode, the mobile station 104 does not wake up periodically (for example, every

[5] Pombo, column 5, line 43 - column 6, line 7.

few seconds) to detect a control channel. Rather, the mobile station in continuous sleep mode remains largely powered down (but not turned off) for an extended period of time. When the extended period of time elapses, the mobile station again powers up to search for a control channel.[6]

The sleep time associated with the third process (predicting when a user needs to communicate) corresponds to the duration of the period during which the mobile station 104 enters a low-power sleep mode. The sleep time is set equal to the difference between the next call time and the current time. The next call time is determined by predicting from the data stored in the call activity table when the next call is likely to be made by the user. At step 612, if the calculated sleep time exceeds an hour, the sleep time will be reset to a maximum of one hour.[7]

In a further discussion about the third process (predicting when a user needs to communicate), Pombo discloses the mobile station reduces battery power consumption by increasing the channel search period during times when the control activity table indicates control activity is less likely. Stated alternatively, the mobile station decreases the frequency at which it searches for control channels during such times. As an example using the control activity table data above, during the time from 3 AM to 10 AM, the control activity table records no registrations or other control activity. Similarly, when the user is in his office or in the cafeteria, few registrations are recorded. Detecting this, the mobile station increases the control channel search period during these times. For example, the control channel search period is increased from 1.5 seconds to 5 seconds to 10 seconds (FIG. 5, FIG. 6). The mobile station may even enter a low power sleep mode for a predetermined sleep time (step 614). Other than when searching for a control channel, the power to the receiver 108 and the

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[6] Pombo, column 6, lines 8-17.
[7] Pombo, column 11, lines 12-19.

transmitter 110 is cut off, saving battery power. By powering the receiver 108 only during the occasional search periods, battery power consumption is greatly reduced.[8]

However, contrary to the Official Action, Pombo also does not disclose or suggest a reception period controller configured to control the reception period based on a reception state measurement result. That is, while Pombo discloses that three processes may be combined to reduce power consumption (predicted user location, predicted user movement, and a predicted time to communicate), Pombo discloses that these three techniques are used **serially and not in parallel**. That is, the device of Pombo measures signal strength of a control signal broadcast by a base station only to determine or predict user movement.[9] Pombo does not use the measured signal strength to control a reception period. As shown in Figure 6 of Pombo, and as disclosed in the text of Pombo,[10] the signal strength measurements are used by an algorithm only to control battery operations, not reception periods. Instead, Pombo controls a reception period only based on stored call activity records, not on a reception state measurement result ("The next call time is determined by predicting from the data stored in the call activity table when the next call is likely to be made by the user.")

Despite the above-identified failings of Pombo, to advance prosecution, Applicants' independent claims are amended to recite additional features disclosed in Applicants' specification. Applicants submit that Pombo also does not disclose or suggest Applicants' amended feature of

> performing a first and second control process, wherein
> when the movement state is a low-speed state, the first control process shortens a low-speed reception period as the reception state degrades,
> when the movement state is a high-speed state, the second control process shortens a high-speed reception period as the reception state degrades, and
> when the reception state is constant, the high-speed reception period is shorter than the low-speed reception period.

[8] Pombo, column 12, line 65 – column 13, line 16.
[9] Pombo column 5, line 43 - column 6, line 7.
[10] Pombo column 6, lines 8-17, column 11, lines 12-19, and column 12, line 65 through column 13, line 16.

Applicants have considered Sato and submit Sato does not cure the deficiencies of Pombo. As none of the cited prior art, individually or in combination, disclose or suggest all the elements of independent Claims 9, 12, 14 and 15, Applicants submit the inventions defined by Claims 9, 12, 14 and 15, and all claims depending therefrom, are not rendered obvious by the asserted references for at least the reasons stated above.[11]

Furthermore, regarding Claims 10 and 13, the Official Action asserts that the ability of Pombo to predict when a user needs to communicate corresponds to Applicants' claimed determining whether a transmitter/receiver is in communication or standby. Applicants traverse this assertion as Applicants' claims are explicit that the state that is determined is ***a present state*** not a ***future/predictive state***. That is, Applicants claims recite "....determine a communication state corresponding to whether the transmitter/receiver ***is*** in a communication state or a stand-by state." Pombo does not measure current communications state, and does not control a reception period based on a current communications state.

Furthermore, the Official Action asserts that predicting when a user needs to communicate inherently corresponds to determining a current communication state of a mobile terminal. Applicants submit that the allegations and analysis supporting this assertion of inherency do not show "that the alleged inherent characteristic necessarily flows from the teachings of the applied prior art"[12] There is no such showing in the Official Action. It is

[11] MPEP § 2142 "...the prior art reference (or references when combined) must teach or suggest **all** the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)."

[12] See MPEP 2112 (emphasis in original) (citation omitted). See also same section stating that "[t]he fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic," (emphasis in original). See also In re Robertson, 49 USPQ2d 1949, 1951 (Fed. Cir. 1999) ("[t]o establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill,'" citing Continental Can Co. v. Monsanto Co., 948 F2d 1264, 1268, 20 USPQ2d 1746, 1749 (Fed. Cir. 1991); and "[i]nherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient," Id. at 1269 (citation omitted)).

clear that Applicants' current communication state is different than the predicted future communication state of Pombo.

Furthermore, the Official Action provides an analysis that is based on conjecture about how the controller of Pombo ***could*** work if the future state prediction was a present state measurement, rather than on the controller of Pombo actually ***does*** work. "To establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.'"[13] The controller of Pombo does not inherently use a state (i.e., current communications state) that the device does not measure. Because Pombo does not disclose or suggest Applicants' [current] communication state determination, Pombo does not disclose or suggest Applicants' claimed reception period controller which controls a reception period based on said [current] communication state determination. Thus, Applicants submit that the rejection of Claims 10 and 13 is based on an improper hindsight reconstruction of Applicants' claimed invention.

[13] *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999).

Accordingly, in view of the present amendment and in light of the previous discussion, Applicants respectfully submit that the present application is in condition for allowance and respectfully request an early and favorable action to that effect.

Respectfully submitted,

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